What is Claimed is:

1. A robot apparatus including a body and a plurality of movable parts connected to said body, comprising:

a plurality of movable part driving means for driving said movable parts;

a local control loop for controlling one of said movable parts;

local control means for controlling said local control loop;

a integrated control loop serving as a higher order control loop than said local control loop for controlling said local control loop;

integrated control means for controlling said integrated control loop; and

priority determination means for determining priority between control amounts calculated by said local control means and said integrated control means to be used to control said movable parts based on a predetermined condition.

2. A robot apparatus according to claim 1, wherein said priority determination means provides higher priority to the control amounts calculated by said local control means within an initial period of time after the

control is started, but provides higher priority to the control amounts calculated by said integrated control means within a set period of time.

3. A robot apparatus according to claim 1, wherein said priority determination means provides higher priority to the control amounts calculated by said local control means in a high frequency control system, but provides higher priority to the control amounts calculated by said integrated control means in a low frequency control system.

4. A robot apparatus according to claim 1, further comprising detection means for detecting states of different portions of said robot apparatus, wherein the predetermined condition is that any of detection values of said detection means exceeds a predetermined value or an unexpected detection value is outputted from said detection means.

5. A robot apparatus according to claim 1, wherein said local control means issues a notification of states of the movable part driving means of said local control loop to said integrated control means, and said integrated control means issues control instructions including target values successively corrected based on the states of the movable part driving means included in

the notifications.

6. A robot apparatus according to claim 1, further comprising component ratio adjustment means for adjusting component ratios between the control amounts for said movable part driving means from said integrated control means and the control amounts for said movable part driving means from said local control means.

7. A robot apparatus according to claim 6, wherein said component ratio adjustment means adjusts the component ratios in response to the strength of force acting upon said robot apparatus or some other state of said robot apparatus.

8. A robot apparatus according to claim 6, wherein said component ratio adjustment means transiently adjusts the component ratios for the changeover from control by said local control means to control by said integrated control means in a predetermined set period of time.

9. A robot apparatus according to claim 8, wherein the set time is determined in response to an object apparatus motion by said integrated control means.

10. A robot apparatus according to claim 8, wherein said robot apparatus is a legged mobile robot including a plurality of movable legs, and the set time is determined depending upon a walking cycle using said

movable legs.

11. A robot apparatus according to claim 1, wherein aid local control apparatus comprises a data transmission apparatus for transmitting a control instruction to an associated one of said movable part driving means, and said data transmission apparatus is connected in a daisy chain connection to a data processing apparatus, which is connected to the associated movable part driving means, by a single transmission line.

12. A robot apparatus according to claim 4, wherein said movable parts comprise a plurality of movable legs each having a foot part for contacting with a ground surface and alternately acting as a supporting leg and an idle leg to perform a legged operation, said detection means comprises a ground contact confirmation sensor for confirming a contacting state of a sole of said foot part of each of said movable legs with the ground surface, and said local control means discriminates satisfaction of the predetermined condition based on sensor values from the ground contact confirmation sensors for said movable legs to perform changeover between said integrated control loop and said local control loop.

13. A robot apparatus according to claim 12, wherein a plurality of pressure sensors are disposed on the sole of the foot part of each of said movable legs, and said local control loop controls driving of the foot parts in response to detection of a variation of any of outputs of said pressure sensors so that said pressure sensors may contact uniformly with the road surface.

14. A robot apparatus according to claim 13, wherein said local control means controls driving of the foot parts by said second control system when any of the foot parts is brought into contact with and/or separates from the ground surface while said robot apparatus walks on a rough ground, a descending slope or an ascending slope.

15. A robot apparatus including a body and a plurality of movable parts connected to said body, comprising:

a plurality of movable part driving means for individually driving said movable parts;

integrated control means for performing integrated control for a motion of said entire robot apparatus in a first control cycle; and

local control means for controlling some of said movable parts in a second control cycle shorter than the

first control cycle.

16. A motion controlling method for a robot apparatus including a body and a plurality of movable parts connected to said body, comprising:

a local control step of controlling a motion of said robot apparatus by means of a local control loop which control some of said movable parts;

a integrated control step of controlling a motion of said robot apparatus by means of a integrated control loop which serves as a higher order control loop than said local control loop and controls said local control loop; and

a priority determination step of determining priority between control amounts calculated by the local control step and the integrated control step to be used to control said movable parts based on a predetermined condition.

17. A motion controlling method for a robot apparatus according to claim 16, wherein the priority determination step provides higher priority to the control amounts calculated by the local control step within an initial period of time after the control is started, but provides higher priority to the control amounts calculated by the integrated control step within

a set period of time.

18. A motion controlling method for a robot apparatus according to claim 16, wherein the priority determination step provides higher priority to the control amounts calculated by the local control step in a high frequency control system, but provides higher priority to the control amounts calculated by the integrated control step in a low frequency control system.

19. A motion controlling method for a robot apparatus according to claim 16, further comprising detection step for detecting states of different portions of said robot apparatus, wherein the predetermined condition is that any of detection values by the detection step exceeds a predetermined value or an unexpected detection value is outputted at the detection step.

20. A motion controlling method for a robot apparatus according to claim 16, wherein the local control step issues a notification of operation states of the movable part driving means at the local control step to the integrated control step, and the integrated control step issues control instructions including target values successively corrected based on the states of the movable part driving means included in the notifications.

21. A motion controlling method for a robot apparatus according to claim 16, further comprising a component ratio adjustment step for adjusting component ratios between the control amounts by the integrated control step and the control amounts by the local control step.

22. A motion controlling method for a robot apparatus according to claim 21, wherein the component ratio adjustment step adjusts the component ratios in response to the strength of force acting upon said robot apparatus or some other state of said robot apparatus.

23. A motion controlling method for a robot apparatus according to claim 21, wherein the component ratio adjustment step transiently adjusts the component ratios for the changeover from control by the local control step to control by the integrated control step in a predetermined set period of time.

24. A motion controlling method for a robot apparatus according to claim 23, wherein the set time is determined in response to an object apparatus motion at the integrated control step.

25. A motion controlling method for a robot apparatus according to claim 23, wherein said robot apparatus is a legged mobile robot including a plurality

of movable legs, and the set time is determined depending upon a walking cycle using said movable legs.

26. A motion controlling method for a robot apparatus according to claim 16, wherein said movable parts comprise a plurality of movable legs each having a foot part for contacting with a ground surface and alternately acting as a supporting leg and an idle leg to perform a legged operation, said robot apparatus comprises a ground contact confirmation sensor for confirming a contacting state of a sole of said foot part of each of said movable legs with the ground surface, and the local control step discriminates satisfaction of the predetermined condition based on sensor values from the ground contact confirmation sensors for said movable legs to perform changeover between said integrated control loop and said local control loop.

27. A motion controlling method for a robot apparatus according to claim 26, wherein a plurality of pressure sensors are disposed on the sole of the foot part of each of said movable legs, and said local control step controls driving of the foot parts in response to detection of a variation of any of outputs of said pressure sensors so that said pressure sensors may contact uniformly with the road surface.

28. A motion controlling method for a robot apparatus according to claim 27, wherein said local control step is rendered operative when said robot apparatus walks on a rough ground, a descending slope or an ascending slope.